

PERMIT BOILERPLATE PROCEDURES FOR COAL PROCESSING PLANTS

I. PURPOSE

To specify requirements for permit approval for coal preparation, processing and loadout (tipple) operations. This boilerplate applies to both NSPS and non-NSPS facilities, but it does not apply to coal thermal dryers or pneumatic coal cleaning equipment. Additional details concerning applicability are given in Section V.A. of these procedures.

This boilerplate is meant to provide a guideline for the minimum requirements of the Department of Environmental Quality - Air Division. More stringent requirements may be imposed, if necessary, to demonstrate compliance with NAAQS or other special requirements.

II. REFERENCES

Commonwealth of Virginia Administrative Code (VAC); Chapter 50, Parts I and II (9 VAC 5-50-10 et seq.); Chapter 80, Part I, 9 VAC 5-80-10; 40 CFR 60.250 through 60.254 (NSPS, Subpart Y).

III. DEFINITIONS

The following definitions are found in 40 CFR 60.251 and in 9 VAC 5-80-10 B:

Bituminous coal - Solid fossil fuel classified as bituminous coal by ASTM Designation D388-77.

Coal - All solid fossil fuels classified as anthracite, bituminous, subbituminous, or lignite by ASTM designation D388-77.

Coal preparation plant - Any facility (excluding underground mining operations) which prepares coal by one or more of the following processes: breaking, crushing, screening, wet or dry cleaning, and thermal drying.

Coal processing and conveying equipment - Any machinery used to reduce the size of coal or to separate coal from refuse, and the equipment used to convey coal to or remove coal and refuse from the machinery. This includes, but is not limited to breakers, crushers, screens, and conveyor belts.

Coal storage system - Any facility used to store coal except for open storage piles.

Construction - Fabrication, erection or installation of an emissions unit.

Modification - A physical change in, change in method of operation of, or addition to, an emissions unit which increases the amount of any air pollutant emitted into the atmosphere by the unit or which results in the emission of any air pollutant not previously emitted. For the complete definition, see "modification" under 9 VAC 5-80-10 B.3.

Pneumatic coal-cleaning equipment - Any facility which classifies bituminous coal by size or separates bituminous coal from refuse by application of air stream(s).

Reconstruction - The replacement of an emissions unit or its components to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital costs required to construct a comparable entirely new unit. (Also see 9 VAC 5-80-10 B.3.)

Thermal dryer - Any facility in which the moisture content of bituminous coal is reduced by contact with a heated gas stream which is exhausted to the atmosphere.

Transfer and loading system - Any facility used to transfer and load coal for shipment.

IV. EMISSIONS CALCULATIONS

A. Criteria Emission Factors

Unless specified and well documented by the applicant, the following emission factors shall be used to calculate emissions:

Raw or clean coal storage - loading clean and raw coal stockpiles from conveyors/stackers (from AP-42, Section 13.2.4, January 1995, See Appendix A for detailed calculation), SCC 3-05-010-09 - Raw, SCC 3-05-010-14 - Clean	
PM	0.013 lb/T of coal processed
PM-10	0.005 lb/T
Crushing - SCC 3-05-010-10 (from quarry boilerplate secondary crushing)	
PM	0.036 lb/T
PM-10	0.0024 lb/T
Coal transfer - SCC 3-05-010-11 - conveyor transfers (from quarry boilerplate)	
PM	0.026 lb/T
PM-10	0.0014 lb/T
Screening - SCC 3-05-010-12 (from quarry boilerplate)	
PM	0.15 lb/T
PM-10	0.015 lb/T
Surge bin - Equivalent to two conveyor transfers (from quarry boilerplate)	
PM	0.052 lb/T
PM-10	0.0028 lb/T
Truck/train loading - Considered equivalent to a conveyor transfer	
PM	0.026 lb/T
PM-10	0.0014 lb/T

Wet process emissions

VOC 0.05 lb/T of clean coal produced*
 10% emitted inside coal preparation building
 90% emitted as fugitive emissions

* This factor can be used without requiring information on the material used in the wet process. If emissions using a material balance method is preferable (lower emissions), that can be used in lieu of the above factor. If the source has a thermal dryer, all emissions should be accounted for through the dryer using the 0.1 lb/T of coal dried emission factor.

B. Emission Controls and BACT

Best Available Control Technology control efficiency* for coal processing is 90% control of total particulate and PM-10 emissions. The following list shows the commonly used particulate control methods employed at coal preparation facilities:

1. Partial enclosure - 70% control of PM and PM-10
2. Full enclosure - 95% control of PM, 90% for PM-10
3. Wet suppression - 95% control of PM, 90% for PM-10
4. Wet suppression with partial enclosure - 98% control of PM, 97% for PM-10
5. Wet suppression with full enclosure - 99% control of PM and PM-10
6. Baghouse - 99% control of PM and PM-10

* The control efficiencies listed are an average of the applicable control efficiencies from the quarry boilerplate procedures

V. REQUIREMENTS

A. Applicability

This boilerplate applies to construction, reconstruction, modification, or relocation of coal preparation, processing and loadout (tipple) facilities including both NSPS (Subpart Y) and non-NSPS equipment. Thermal dryers and air tables are excluded from this boilerplate. Also excluded are underground mining operations (equipment physically located underground).

B. NSPS Applicability

NSPS Subpart Y applies to construction, modification, or reconstruction of the following affected facilities in coal preparation plants (as defined in III.) after October 24, 1974, that process more than 200 tons per day: thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, and coal transfer and loading systems.

C. Permit limits

1. Annual permit limits are required for each criteria pollutant as specified by current agency policy, currently those having recommended emissions equal to or greater than 0.5 ton per year. Due to the inability to test for most coal preparation plant emissions, compliance will be determined solely by throughput records, so a plantwide throughput limit may be appropriate in most cases.
2. Emission limits for toxic pollutants should be established and included in the permit in accordance with current agency policy. Any of the liquid materials used may have toxic pollutant emissions, but most do not have any priority pollutants.
3. Throughput limits for volatile materials used may be necessary if used to set a VOC limit.

D. Opacity

Visible emissions shall not exceed 20 percent opacity from all equipment, except those from baghouses which shall not exceed 5 percent opacity. This condition applies at all times except during startup, shutdown, or malfunction.

E. Emissions/Compliance Testing

1. A three hour opacity test is required for all emission points that are subject to NSPS, and is the responsibility of the owner or operator. Wet processing equipment located inside a building will not require opacity testing since they have negligible emissions.
2. The opacity test must be performed by a certified EPA Method 9 visible emissions evaluator within 60 days after achieving maximum operation but no later than 180 days after initial startup. The observer may observe three points during each test. Two copies of the test results are to be submitted within 45 days after test completion.

F. Training, Operation, and Maintenance

There typically is not any comprehensive training for coal preparation plant operators, but they should be trained on using the control systems properly. The source is required to maintain written air pollution control equipment operation and maintenance procedures on site.

G. Notification

1. The owner or operator of all facilities subject to this boilerplate must submit notification of the following:
 - a. the date of commencement of construction or reconstruction,
 - b. the anticipated date of initial startup (for NSPS sources),
 - c. the actual date of initial startup,
 - d. the anticipated date of opacity observations (NSPS sources),

2. Each notification shall be submitted to the DEQ Regional Office. Copies of notifications, except the one outlined in G.1.d. above, should be mailed to the NSPS Coordinator, EPA Region III if the equipment is subject to NSPS.
3. The owner and operator of all facilities must notify the DEQ of any malfunction causing excess emissions for more than one hour. This notification shall be made within four daytime business hours of the occurrence and shall within two weeks submit a written statement giving all pertinent facts.

H. Recordkeeping

1. All facilities processing coal must maintain the following records on site for the most recent five year period, at a minimum:
 - a. monthly and annual records of coal shipped,
 - b. a statement of the time, place, and nature of training provided to each operator, and
 - c. air pollution control equipment maintenance records.

I. Reporting

None other than emission inventory requests and that specified in the notifications and testing sections.

J. Modeling

No modeling is generally required, but may be necessary for non-exempt toxic pollutant emissions and shall be done according to agency policy.

K. Permit Approval

Approval authority is given to the Regional Office. The authority to sign for the Executive Director shall be as specified in the agency's current delegation of authority memo.

ATTACHMENT A - Stockpile emission derivation

$$E = k * 0.0032 \frac{(\frac{U}{5})^{1.3}}{(\frac{M}{2})^{1.4}} \text{ lb/ton}$$

From Equation 1, of AP-42 Section 13.2.4, dated January 1995:

where:

E = emission factor

k = particle size multiplier

U = mean wind speed (mph)

M = material moisture content (%)

The following shows the values for k:

Aerodynamic Particle Size Multiplier (k) for Equation 1					
< 100 μm^*	< 30 μm	< 15 μm	< 10 μm	< 5 μm	< 2.5 μm
0.98	0.74	0.48	0.35	0.20	0.11

* Derived using logarithmic curve fitting of given data

Ranges of Source Conditions For Equation 1		
Silt Content (%)	Moisture Content (%)	Wind Speed (mph)
0.44 - 19	0.25 - 4.8	1.3 - 15

For particulate matter (PM & PM-10):

$$E_{PM} = 0.98 * 0.0032 \frac{(\frac{15}{5})^{1.3}}{(\frac{2}{2})^{1.4}} = 0.013 \text{ lb/ton}$$

AND

$$E_{PM-10} = 0.35 * 0.0032 \frac{(\frac{15}{5})^{1.3}}{(\frac{2}{2})^{1.4}} = 0.005 \text{ lb/ton}$$

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